

NEW NEOTROPICAL SANDFLIES OF THE
CULICOIDES DEBILIPALPIS GROUP¹

(DIPTERA: CERATOPOGONIDAE)

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ABSTRACT—Three new species of Neotropical *Culicoides* are described: *C. eadsi* reared from tree holes in Texas and Mexico; *C. darlingtonae* taken in a bat cave in Trinidad; and *C. guerrai* from light traps in Trinidad. Diagnostic characters of *C. debilipalpis* Lutz and *C. hoffmani* Fox are summarized for comparison with these species.

At this time we are describing several new *Culicoides* related to *C. debilipalpis* Lutz in order to make the names available for general reviews of the biting midges of the West Indies and Trinidad. We wish to thank Miss Linda Heath and Dr. Niphan Ratanaworabhan for making the drawings.

Antennal Ratio (abbreviated AR) is the combined length of the five elongated distal antennomeres (for convenience hereafter referred to as segments) divided by the combined length of the eight short preceding segments. Palpal Ratio (PR) is the length of the third palpal segment divided by its greatest breadth. Proboscis/Head Ratio (P/H Ratio) is the length of the proboscis measured from the distal end of the labrum-epipharynx to the anterior margin of the tormae, divided by the length measured from the anterior margin of the tormae to the median hair socket between the eyes. Wing length is measured from the basal arculus to the wing tip; Costal Ratio (CR) is the length of the costa measured from the basal arculus to the tip of the second radial cell (2RC) divided by the wing length.

***Culicoides debilipalpis* Lutz**

Culicoides debilipalpis Lutz, 1913, Mem. Inst. Oswaldo Cruz 5:60 (female; Brazil; figure wing); Costa Lima, 1937, idem. 32:415 (figure palpus); Macfie, 1937, Ann. Mag. Nat. Hist. 20:7 (Trinidad; female redescribed); Forattini, 1957, Arq. Fac. Hig. S. Pub. Univ. São Paulo 11:383 (redescribed; figures); Wirth and Blanton, 1959, Proc. U.S. Nat. Mus. 109:442 (redescribed; figures).

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The precise identity of *C. debilipalpis* has been subject to considerable confusion in the literature because of the lack of a description of a male from the type series. Lutz' original syntypes came from "some females and a male from Anhemby in the State of Sao Paulo and I collected others in Formoso (Serra de Bocaina) in evenings on horses. They also seem to attack man." Costa Lima figured the palpus "from a specimen of the typical series, from Saltos de Iguassu (Parana)." Apparently Lutz studied material from localities not mentioned originally by him. Wirth and Blanton reported on the characters of four females from "Amazonas de Cima, 1913, Lutz" borrowed from the Lutz collection in the Instituto Oswaldo Cruz.

Lutz' figure of the wing of *C. debilipalpis* shows a very hairy wing with two rows of macrotrichia extending to the base of the cell M2, the distal pale spot in cell R5 distinctly transverse, the poststigmatic pale spots with the posterior one located slightly proximad of the anterior, and a large pale area extending from in front of the mediocubital fork to the back side of the medial fork. Costa Lima's two figures of the female palpus show a sensory pit deeper than the diameter of the pore opening. Wirth and Blanton (1. c.) added the following information from the four females studied by them: Wing length, 0.68 mm; CR 0.62; eyes broadly separated, with short interfacetal hairs; antenna with flagellar segments in proportion of 14-10-11-12-13-13-13-13-14-15-16-22, AR 0.81; distal sensory tufts present on segments 3, 8-10; palpal segments in proportion of 8-17-22-9-11, PR 2.2; mandible with 18-20 teeth; spermathecae measuring 0.050 by 0.034 mm and 0.043 by 0.037 mm. Forattini's redescription appears to be partly of *C. debilipalpis* as recognized here, and partly of *C. hoffmani* Fox (male genitalia, after Wirth and Blanton 1956), and *C. equatoriensis* Barbosa (figure of wing), which together with *C. glabrior* Macfie he reduced to synonymy with *C. debilipalpis*. Following the conclusions reached in our Panama revision, we would amplify or emend our own observations of Lutz' material to characterize the species as follows, the measurements based on means of about 35 specimens.

Female.—Moderately small, wing 0.80 mm long. Eyes moderately separated, with very short interfacetal hairs, appearing bare in profile of eye. AR 0.83; distal sensory tufts present on antennal segments 3, 8-10. Third palpal segment long and slender, PR 2.2, the sensory pit small and deep, with pit deeper than the diameter of the pore opening. Mandible with 15 teeth. Scutum with moderately prominent dark brown sublateral patches. Halter brownish. Wing moderately hairy, the macrotrichia extending to base of cell M2 in two rows; distal pale spot in cell R5 transverse, not filling space between anterior wing margin and vein M1, the poststigmatic pale spots fairly close together, the posterior one located slightly proximad of the other; one pale spot in distal part of anal cell; pale spot lying behind medial fork distinct but the one lying in front of mediocubital fork indistinct or absent. Legs with narrow pale rings subapically on fore and mid femora,

subbasal pale rings on all tibiae; apex of hind tibia pale. Spermathecae slightly unequal, ovoid with long, rather stout necks; measuring 0.060 by 0.039 mm and 0.050 by 0.032 mm.

Male.—Ninth sternum with broad, very shallow caudomedian excavation; ninth tergum long and tapering with short, triangular apicolateral processes. Basistyle with "foot-shaped" ventral root, dorsal root slender; dististyle slender and curving. Aedeagus with basal arch extending to more than two-thirds of total length, the mesal apex of arch narrow, the basal arms straight; distal process pointed apically without apparent subapical projections. Parameres each with knobbed base, stem bent near base, very slender and straight in midportion, with a well developed ventral lobe; distal portion not greatly elongated, with slender pointed tip and 4-6 lateral fringing spines.

Our association of the male is based on rearing records in the southeastern United States and on specimens trapped at the same time and place in numerous locations over the range of the species. The male genitalia are identical with those of *C. paraensis* (Goeldi), which the species closely resembles in all respects except the wing pattern, and there is a distinct possibility that the two forms are wing pattern phenotypes of the same species, in which case *C. paraensis* has priority.

C. debilipalpis occurs in the southeastern United States from Maryland to Florida and Louisiana, in Central America from Honduras to Panama and in South America to Trinidad, Brazil, and Argentina. In Texas and Mexico this species is apparently replaced by *C. eadsi*, new species, and in the West Indies by *C. hoffmani* Fox.

***Culicoides hoffmani* Fox**

Culicoides hoffmani Fox, 1946, Ann. Ent. Soc. Amer. 39:251 (female; Trinidad; biting man; fig. wing, scutal pattern); Fox, 1949, Bull. Brooklyn Ent. Soc. 44: 29 (male, female; Puerto Rico, reared, tree hole; fig. palpus, spermathecae, male genitalia); Wirth and Blanton, 1956, Jour. Washington Acad. Sci. 46:189 (male, female redescribed; distribution; fig. wing, scutum, palpus, spermathecae, tibial comb, male genitalia); Linley and Kettle, 1964, Ann. Mag. Nat. Hist. Ser. 13, 7:129 (Jamaica; larva, pupa; figs.).

Our separation of the female of *C. hoffmani* from that of *C. debilipalpis* is made on the basis of the following characterization of females of *C. hoffmani* from Puerto Rico and Jamaica, where *C. debilipalpis* does not occur:

Female.—Slightly smaller than *C. debilipalpis*, wing 0.76 mm long. Eyes moderately separated, with longer interfacetal hairs than in *C. debilipalpis*. Third palpal segment shorter and broader, PR 1.6. Wing not as hairy, the macrotrichia in cell M2 rarely extending to base of cell, usually confined to apical half of wing; poststigmatic pale spots in cell R5 usually more widely separated and not so obliquely located. Spermathecae subequal to very slightly unequal, measuring 0.048 by 0.034 mm and 0.043 by 0.031 mm.

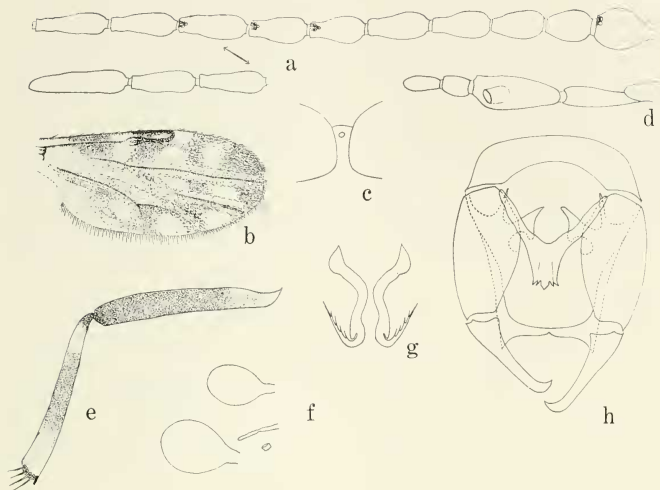


Fig. 1, *Culicoides eadsi*, n. sp.: a, female antenna; b, female wing; c, female eye separation; d, female palpus; e, female hind femur and tibia; f, female spermathecae; g, male parameres; h, male genitalia, parameres removed.

Male.—Genitalia quite distinctive: Aedeagus with basal arms relatively stout, distal portion stout with three strongly sclerotized distal points. Parameres each with slender midportion without ventral lobe.

Distribution.—Dominica, Jamaica, Panama, Puerto Rico, St. Lucia, Trinidad, Virgin Islands.

***Culicoides eadsi* Wirth and Blanton, n. sp.**

(Fig. 1)

Female.—Length of wing 0.81 mm.

Head: Eyes (fig. 1c) broadly separated, with short interfacetal hairs. Antenna (fig. 1a) with lengths of flagellar segments in proportion of 25-20-22-25-25-25-26-26-26-28-28-43, AR 0.78; no sharp increase in lengths of segments in distal series; distal sensory tufts prominent, located on segments 3, 8-10. Palpal segments (fig. 1d) with lengths in proportion of 15-30-42-13-15, PR 2.8; third segment moderately swollen, with a small, deep sensory pit opening by a round pore. Proboscis moderately long, P/H Ratio 0.83; mandible with 15 teeth.

Thorax: Brownish, scutum as seen in slide mounted specimens without conspicuous pattern. Legs brown, knee spots blackish; fore and mid femora with narrow subapical pale rings, all tibiae with narrow subbasal pale rings, and hind tibia with distal fourth pale; hind tibial comb with four spines, the second from the spur longest (fig. 1e).

Wing (fig. 1b): Pattern as figured; distal pale spot in cell R5 transverse, the two poststigmatic pale spots separated, the posterior one located slightly proximad of the other; distal pale spot in anal cell slightly angular; distinct pale spots present behind medial fork and in front of mediocubital fork. CR 0.57; 2 RC narrow but with distinct lumen; macrotrichia moderately numerous on distal half of wing and extending in a double line to base of cell M2. Halter dark.

Abdomen: Dark brown. Spermathecae (fig. 1f) unequal, measuring 0.052 by 0.030 mm and 0.042 by 0.025 mm, oval; the necks relatively long, stout, and slightly tapering.

Male.—Similar to the female, with the usual sexual differences, antennal plume well developed. Genitalia (fig. 1h): Ninth sternum with well developed caudo-median excavation, the ventral membrane not spiculate; ninth tergum moderately long and tapering, apicolateral processes short and angular with sharp apical point, the caudal margin between them slightly notched. Basistyle with ventral root "foot-shaped," dorsal root slender and pointed; dististyle quite slender, only slightly curved, with bent, pointed tip. Aedeagus with basal arch extending to about half of total length, basal arms relatively stout and nearly straight; distal portion broad and stout, slightly tapered to broad truncated apex bearing five distal points, the median one distinctly larger and blunter. Parameres (fig. 1g) each with distinct basal knob, main portion long and slender, bent near base, with a distinct ventral lobe distally, distal portion abruptly bent ventromesad, tapering to slender point with 4-5 lateral fringing spines.

Distribution.—Mexico, southern Texas.

Types.—Holotype female, allotype male, Cameron Co., Texas, 25 October 1964, R. B. Eads, reared from tree hole (Type no. 70639, USNM). Paratypes, 40 males, 55 females, same data but also with dates June to October 1963, some with associated larvae and pupae.

Other Specimens Examined.—MEXICO: Acaponeta, Nayarit, 15 August 1960, Arnaud, Ross and Rentz, biting man, 7 females; Alamos (5 mi w), Sonora, 14 August 1959, Werner and Nutting, light trap, 2 females; El Salto, San Luis Potosi, G. W. Byers, biting man, 10 females; Hermosillo, Sonora, 8 August 1960, Arnaud, Ross and Rentz, biting man, 4 females; Merida, Yucatan, 31 July 1964, P. J. Spangler, light trap, 8 males, 32 females; Perico (26 mi n), Sonora, 13 August 1960, Arnaud, Ross and Rentz, biting man, 3 females.

Discussion.—This species is named in honor of Dr. Richard B. Eads of the U.S. Public Health Service who has collected *Culicoides* for us extensively in the Brownsville area of the Texas Rio Grande Valley. The several reared series of *C. eadsi* has helped us immensely in clarifying the taxonomic status of *C. debilipalpis* Lutz, *C. hoffmani* Fox, and this seemingly intermediate species.

Culicoides eadsi is intermediate in female characters between *C. debilipalpis* which has a slender third palpal segment, spermathecae unequal in size, more abundant wing macrotrichia, and more obliquely placed poststigmatic pale spots, and *C. hoffmani*, in which the third palpal segment is shorter and broader, the spermathecae subequal in

size, both small, the wing macrotrichia sparser, and the poststigmatic pale spots usually located further apart and more in line transversely. The male genitalia of *C. eadsi* are practically identical with those of *C. hoffmani*, but the latter species lacks the ventral lobe on the parameres. The relative development and ventrally bent position of the sublateral pair of distal points on the aedeagus is subject to some variation in both *C. hoffmani* and *C. eadsi*, and in both species individuals are often found in which only three prominent distal points are apparent. The pupal respiratory horn of *C. eadsi* is practically identical with that described for *C. hoffmani* by Linley and Kettle (1964, Ann. Mag. Nat. Hist. Ser. 13, 7:129-149).

The available data show that this species is apparently allopatric with the closely related *C. debilipalpis* and *C. hoffmani*. *C. debilipalpis* has a wide range, in the eastern United States from Maryland to Florida and Louisiana, then skipping Texas and Mexico and appearing again from Honduras through Central and South America and Trinidad to Argentina. *C. hoffmani* is found in the West Indies from Jamaica and Puerto Rico south to Trinidad and appearing again in Panama. Much of the published distribution of these two species has been confused by possibly erroneous determinations of the females which are very difficult to separate and apparently overlap somewhat in the ranges of some characters. The above distribution includes only localities represented by males which can be easily distinguished. The females of all three species readily bite man, and the males are seldom taken except by light traps and treehole rearings. Therefore much of the distribution must remain questionable until documented by male records.

***Culicoides darlingtonae* Wirth and Blanton, n. sp.**

(Fig. 2)

Female.—Length of wing 0.86 mm.

Head: Eyes (fig. 2c) narrowly separated, with short interfacetal hairs. Antenna (fig. 2a) with lengths of flagellar segments in proportion of 22-18-22-27-27-28-28-29-30-32-30-50, AR 0.86, segments thus in a continuous series of gradually increasing lengths; distal sensory tufts present on segments 3, 8-10. Palpal segments (fig. 2d) with lengths in proportion of 10-25-30-12-13, PR 2.1; third segment considerably swollen its entire length, with a shallow, round sensory pit. Proboscis moderately short, P/H Ratio 0.76; mandible with 16 very fine teeth.

Thorax: Dark brown, scutal pattern not discernible in slide specimens. Legs brown, knee spots blackish, all tibiae with narrow basal pale rings; hind tibial comb with four spines, the one nearest the spur longest.

Wing (fig. 2b): Pattern as figured; second radial cell included in a dark spot to its apex; pale spot lying over r-m crossvein large and extending to costal margin; cell R5 with two slightly contiguous poststigmatic pale spots, the posterior one located slightly proximad, a large transverse pale spot in distal portion of cell, broadly meet-

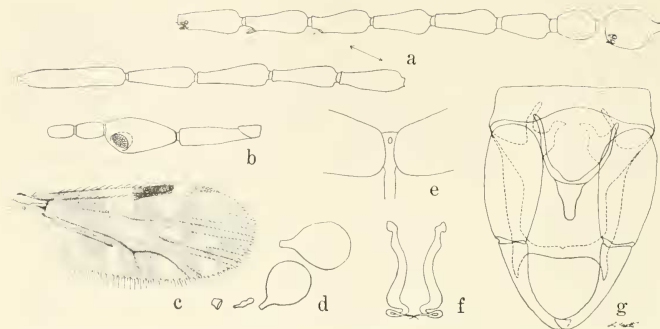


Fig. 2, *Culicoides darlingtonae*, n. sp.: a, female antenna; b, female wing; c, female eye separation; d, female palpus; e, female spermathecae; f, male parameres; g, male genitalia, parameres removed.

ing anterior wing margin and distinctly concave on distal side; cell M1 with two pale spots; cell M2 with small pale spot lying behind medial fork and another in front of mediocubital fork, a large rounded pale spot at wing margin; cell M4 with a large pale spot in distal portion; anal cell with a double pale spot in distal portion; apices of veins M1, M2, M3 + 4 and Cul without pale spots at wing margin. CR 0.61; 2RC with narrow lumen; macrotrichia sparse, mostly in rows, confined to distal third of wing. Halter infuscated.

Abdomen: Blackish. Spermathecae (fig. 2e) two plus rudimentary third and sclerotized ring; the two functional ones oval with long slender necks; slightly unequal, measuring 0.051 by 0.033 mm and 0.043 by 0.032 mm.

Male.—Similar to the female with the usual sexual differences; antennal plume well developed; sensory tufts present on antennal segments 3 and 12; last three segments with lengths in proportion of 60-50-60. Genitalia (fig. 2g): Ninth sternum with scarcely perceptible caudomedian excavation, the ventral membrane not spiculate; ninth tergum moderately long, tapering, with moderately long, pointed, apicolateral processes, the caudal margin between them nearly straight. Basistyle moderately stout, ventral root with posterior hook not well-developed, the anterior point moderately stout, dorsal root longer and more slender; dististyle slender, curving to bent, pointed tip. Aedeagus with basal arch broader than high, basal arms slender and curving; distal portion short and tapering to simple tip, flanked by a pair of appressed, lateral leaves. Parameres (fig. 2f) each with strong basal knob, slender and nearly straight in midportion, with a low ventral lobe near tip, beyond which it is greatly narrowed and twisted ventromesad to filamentous tip without fringing spines.

Distribution.—Trinidad.

Types.—Holotype female, allotype male, Tamana Caves, Trinidad, 17 November 1966, Johanna Darlington (Type no. 70643, USNM). Paratypes, 9 males, 12 females, same data.

Discussion.—This species is dedicated to Miss Johanna Darlington of the University of the West Indies in St. Augustine, Trinidad, who collected the type series. She writes: "They appear in fairly large numbers (150–700 in an hour) in light trap samples from both upper and deep parts of the main cave. Both parts contain dense bat roosts and beds of guano. We have tried unsuccessfully to rear the flies from samples of moist guano. Small stagnant pools in the upper part have yielded numerous psychodids but no ceratopogonids. I think that moist guano is the more likely breeding site, as there is no stagnant water in the deep part. I have no evidence as to whether or not the adult flies take blood from the bats, but they do not attempt to bite humans."

C. darlingtonae is closely related to *C. debilipalpis* Lutz and *C. hoffmani* Fox, both of which are common in Trinidad in the forest. The wing is not as hairy as in *debilipalpis*, and the distal pale spot in cell R5 reaches the anterior wing margin and is concave on the distal side; the third palpal segment is broader, much as in *hoffmani*. The male genitalia can readily be distinguished by the short aedeagus with broad basal arch and the very short distal process with appressed lateral leaves, the parameres are much as in *debilipalpis*, but the slender distal portion is more tightly twisted and appressed to the ventral lobe and there are no fringing distal spines.

***Culicoides guerrai* Wirth and Blanton, n. sp.**

(Fig. 3)

Female.—Length of wing 0.95 mm.

Head: Eyes (fig. 3c) narrowly separated, nearly contiguous, with short interfacetal hairs. Antenna (fig. 3a) with lengths of flagellar segments in proportion of 30-25-28-30-30-30-32-32-33-35-32-60, AR 0.83; segments long, slender, tapering, in nearly a continuous series of gradually increasing lengths, penultimate segment unusually short; distal sensory tufts present on segments 3, 8–10 (2 each), with strong fringing setae. Palpal segments (fig. 3d) with lengths in proportion of 10-25-38-12-12, PR 2.1; third segment considerably swollen, with a round, shallow sensory pit. Proboscis short, P/H Ratio 0.67; mandible with 15 teeth.

Thorax: Dark brown, scutal pattern not discernible in slide specimens. Legs brown, knee spots blackish; tibiae with narrow basal and hind tibia with apical pale bands; hind tibial comb with four spines, the second from the spur longest.

Wing (fig. 3b): Pattern as figured; second radial cell included in a very dark spot to its apex; pale spot over r-m crossvein extending to costal margin; cell R5 with a small round poststigmatic pale spot lying at tip of 2RC, and a contiguous, longitudinal, arcuate pale spot lying just behind 2RC, a small, transverse pale spot in distal part of cell not meeting anterior wing margin; cell M1 with two pale spots; cell M2 with a faint pale spot lying behind medial fork but none lying in front of mediocubital fork, a small round pale spot lying at wing margin in tip of cell; cell M4 with a small round pale spot in distal portion; anal cell with a single pale spot in distal portion; apices of veins M1, M2, M3 + 4 and Cul without

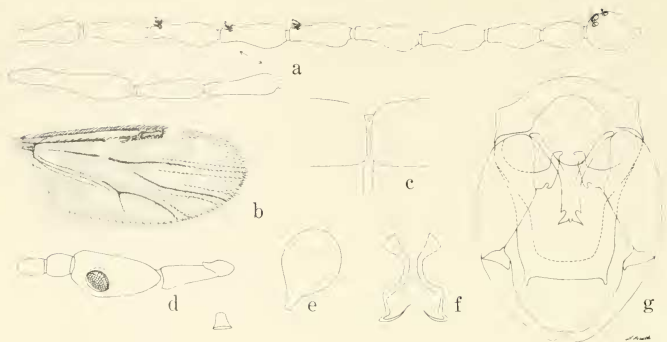


Fig. 3, *Culicoides guerrai*, n. sp.: a, female antenna; b, female wing; c, female eye separation; d, female palpus; e, female spermathecae; f, male parameres; g, male genitalia, parameres removed.

pale spots at wing margin. CR 0.62; 2RC with moderately broad lumen; macrotrichia strong but moderately sparse, confined to distal third of wing. Halter brownish.

Abdomen: Dark brown. Spermatheca (fig. 3e) single, oval with a long slender sclerotized neck; measuring 0.072 by 0.038 mm.

Male.—Similar to the female with the usual sexual differences; antennal plume well developed, brownish; sensory tufts present on antennal segments 3, 10–12, last three segments with lengths in proportion of 56-48-60. Genitalia (fig. 3g): Ninth sternum with broad, deep, caudomedian excavation, the ventral membrane not spiculate; ninth tergum long and tapering, apicolateral processes small, slender and pointed, the caudal margin between them nearly straight. Aedeagus with basal arch extending to about two-fifths of total length, the basal arms slightly curved; distal portion a long, slightly tapering process with bifid tip, the apical points sharp and slightly flaring, also a pair of small, sharp, subapical lateral points, and a small, sharp, median point at tip. Parameres (fig. 3f) each with strong basal knob, midportion quite slender and distinctly curved, swollen at about midlength or slightly past, bent caudad at the swelling and narrowed, then twisted ventromesad and drawn out into a filamentous tip.

Distribution.—Trinidad.

Types.—Holotype male, Tucker Valley, Trinidad, 10 August 1956, T. H. G. Aitken, light trap (Type no. 70644, USNM). Allotype female, same except 22 November 1957. Paratypes, 4 males, 9 females, as follows: TRINIDAD: Same data as type, some with date October 1955, 3 males, 5 females; Chaguaramas Naval Station, 2 November 1956, 1 female; Macqueripe Naval Station, 27 October 1955, 11 January 1956, 14 February 1958, 25 April 1958, 1 male, 3 females; all collected by T. H. G. Aitken in light traps.

Discussion.—This species is named for Mr. Ambrose Guerra of the Trinidad Virus Research Laboratory of the Rockefeller Foundation in appreciation for his collection of much of the Trinidad material studied by Dr. Aitken and ourselves.

Culicoides guerrai differs from the other known species of the *debilipalpis* group in the presence of the arcuate longitudinal poststigmatic pale spot in cell R5 of the wing. The male genitalia are also very distinctive in the unusual shapes of the aedeagus and parameres.

NEW HYMENOPTERAN ENEMIES OF ANTHIDIUM MACULOSUM CRESSON

(HYMENOPTERA: MEGACHILIDAE)

Leucospis affinis Say is known to be a parasite of *Anthidium maculosum* Cresson (Parker and Bohart, 1966, Pan-Pac. Ent. 42(2):91-98). Two newly associated enemies of *A. maculosum* were reared by Schuh (pers. comm.) from several wooden trap-nest blocks set out in 1964 at Montague, Siskiyou County, California.

Each block was made of seven 2 cm thick wooden boards bolted together to form a finished size of 14 × 36 × 9 cm. Approximately 90 holes of 0.47 to 0.95 cm diameter were drilled to a depth of 7.6 cm. The mixed hole sizes were evenly spaced in a linear pattern six holes down and 17 or 18 holes across the face of the nest block. They were fastened to fence posts and other upright objects 0.90-1.20 m off the ground. Approximately 150 *A. maculosum* and 10 specimens of the following two newly associated parasites were reared from these blocks.

Determinations were made by Drs. R. M. Bohart (*Chrysis*), A. A. Grigarick (*Anthidium*), University of California, Davis, and me (*Dioxys*). I wish to thank Joe Schuh, Klamath Falls, Oregon, for setting out and collecting the trap-nest blocks, and for rearing the insects. All specimens are in his personal collection.

Dioxys aurifusca (Titus) (Megachilidae)—One specimen of this parasitic bee was reared from a nest of *A. maculosum*. Hurd (1958, Univ. Calif. Pub. Ent. 14(4):275-302) stated that Cockerell recorded *D. aurifusca* found at Golden, Colorado in a nest of cottony tomentum, evidently made by a species of *Anthidium*. However, this was an unconfirmed association. The rearing record from Montague, California now confirms the relationship. Hurd also suggested a probable affiliation between *D. aurifusca* and *Callanthidium illustre* (Cresson). Because of the large size of the parasitic bee, its comparable distribution with *Callanthidium*, and the similar nesting habits of *Anthidium* and *Callanthidium*, this association is possible but unconfirmed.

Chrysis tripartita Aaron (Chrysididae)—Nine specimens of this chrysidid were also reared from nests of *A. maculosum* by Schuh. Grigarick and Stange (1968, Bull. Calif. Ins. Surv. 9:1-113) listed this species and *C. coloradica* Bohart as parasites of *A. collectum* Huard. They also listed *C. florissanticola* Rohwer as a parasite of *A. banningsense* Cockerell. Custer (1928, Ent. News 39:123-125) recorded *A. porterae* Cockerell as a host for *C. lauta* Cresson. These four chrysidid species are in the *lauta* group of *Chrysis*, as defined by Bohart (1964, Proc. Biol. Soc. Wash. 77:223-236).—DONALD S. HORNING, JR., Department of Zoology, University of Canterbury, Christchurch, New Zealand.